

# Work Order ID 59940

Thursday, June 17, 2010 12:58:08 PM



Page 1

Item ID: D350-591-133

Accept



Setup Start



Revision ID:

Stop



Item Name: Aft Maintenance Step

Start Date: 6/17/2010 Start Qty: 4.00



Cust Item ID:

Required Date: 6/24/2010 Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals: Process Plan:   *H*   Date: 10-6-17 Tooling:            Date:             
QC:            Date:            SPC (Y/N):            Date:           

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
----------	--------------

D2946	Rev B
-------	-------

0.00

0.00

0.00

0.00

100



DC

Document Control

DOCUMENT CONTROL

Memo

Photocopy bluefile and type labels as per PPP D350-591-133 CHG003

*S. dea/28*

*HJ de BG 10/07/27*

110



Large Fab

Large Fab

Large Fab

Memo

1-Cut D2622-120 extrusion to 62.06" long as per Dwg D2946

2-Deburr

\*\*Ensure that 57.09" minimum extrusion is kept and identify to be used for D350-591-215/-216.\*\*

*R10-de-21*

*4*

*[Signature]*

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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		<del>Facing that Qty 24</del>						

**NOTE:** Date & initial all entries

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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Setup

Start

Stop

Run

Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

120

QC5- Inspect part completeness to step on W/O

0.00

QC

Memo

0.00

Quality Control

130

Large Fab

0.00

Large Fab

Memo

0.00

Large Fab

1-Debur and Bevel ends for welding

2-Weld (1) End Cap and (2) Lugs using Jig DT8440 as per Dwg D2946

A/RAluminum Rod

3-Grind End Cap welds flush

140

QC9- Inspect visual per QSI004- Fusion Welds

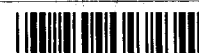
0.00

QC

Memo

0.00

Quality Control



8.06/21

10.06.25

1118242  
1115860

84

4

10.07.20

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Customer:

Reference:




Run

Start

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150  QC Quality Control	QC5- Inspect part completeness to step on W/O  Memo	0.00 0.00				(x9)			
160  HandFinish Hand Finishing	Chemical Conversion Coat per QS1005 4.1  Memo	0.00 0.00				4	9		
170  QC Quality Control	QC3- Inspect Part Finish  Memo	0.00 0.00				4	0		

W/O:		WORK ORDER CHANGES						
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Cust Item ID:

Required Date: 6/24/2010 Req'd Qty: 4.00



Customer:

Reference:

Run

Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 	Large Fab	0.00							
Large Fab	Memo	0.00							
Large Fab	Remove alodine prior to welding. Weld end cap as per Dwg D2946. Grind end cap weld flush. A/R AL ROD BATCH: <u>M112860</u>								
190 	QC9- Inspect visual per QSI004- Fusion Welds	0.00							
QC Quality Control	Memo	0.00							
200 	QC5- Inspect part completeness to step on W/O	0.00							
QC Quality Control	Memo	0.00							

*10.07.21*

*4*

*5* *10.07.22*

*74*

*8.10.12*

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

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Cust Item ID:

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Customer:

Reference:

Run

Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

210

Chemical Conversion Coat per QSI005 4.1

0.00



HandFinish

Memo

0.00

Hand Finishing

4. BL 10-7-22

220

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

Memo

START TIME: 10:10

OVEN TEMPERATURE: 320°

FINISH TIME: 10:40

4. BL 10-7-23

230

Wing Walk as per dwg QSI005 4.4 Batch 114432

0.00



HandFinish

Memo

0.00

Hand Finishing

MA 10 06 26 (4)

W/O:		WORK ORDER CHANGES						
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

240

QC3- Inspect Part Finish

0.00

S. 10/16/26

0.00



QC

Memo

Quality Control

250

Pick Kit

0.00

0.00



Packaging

Memo

Packaging

10.7.27 S. (4)

260

QC4- 100% Inspect kits for completeness

0.00

S. 10/16/26

0.00



QC

Memo

Quality Control

(4)

W/O:		WORK ORDER CHANGES						
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**Work Order ID 59940**

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Setup

Start



Revision ID:

Stop



Item Name: Aft Maintenance Step

Start Date: 6/17/2010 Start Qty: 4.00



Cust Item ID:

Required Date: 6/24/2010 Req'd Qty: 4.00



Customer:

Reference:

Run

Start



Stop



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

270



Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPPD350-591-133

Location: GIPPP Rev: D

280



QC

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

Quality Control

10/07/28 (4)

10/07/29

10.07-28

W/O:		WORK ORDER CHANGES					
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# Picklist Print

Thursday, June 17, 2010 12:58:12 PM

Page 1

Work Order ID: 59940

Parent Item: D350-591-133

Parent Item Name: Aft Maintenance Step

Start Date: 6/17/2010

Required Date: 6/24/2010

Start Qty: 4.00

Required Qty: 4.00

Comments: IPP Rev:B05.10.14 Modified step 10 KJ/EC  
IPP Rev:B06.07.19 D2946 @ rev.b EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D2622-120C



Step Extrusion

Manufactured

No

110

Each

141.9200

0.52

2.08

Location

Loc Qty

Loc Code

WA

141.92

55214

2.92

58544

139

2.08

D2734



Step End Plate

Manufactured

No

130

Each

15.0000

2

8

Location

Loc Qty

Loc Code

WA

15

55014

15

8

D2944



Step Mounting Plate

Manufactured

No

130

Each

23.0000

2

8

Location

Loc Qty

Loc Code

WA

23

53725

23

8

AN4-11A



Bolt

Purchased

No

250

Each

273.0000

4

16

Location

Loc Qty

Loc Code

ST357

273

110382

273

10/7/27 sl (42)

16

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 2

Work Order ID: 59940



Parent Item: D350-591-133



Parent Item Name: Aft Maintenance Step

Start Date: 6/17/2010

Required Date: 6/24/2010

Start Qty: 4.00

Required Qty: 4.00



AN4-14A

Bolt

Purchased No

250 Each

312.0000

8 32



10/7/27

## Location

## Loc Qty

## Loc Code

ST357

296

114752

296

ST358

16

113359

16

32



AN4-16A

Bolt

Purchased No

250 Each

73.0000

8 32



10/7/27

## Location

## Loc Qty

## Loc Code

ST358

73

114330

5

114523

68

32



AN4-7A

Bolt

Purchased No

250 Each

194.0000

2 8



10/7/27

## Location

## Loc Qty

## Loc Code

ST356

194

113226

194

8



AN960JD416

Washer

NAS1149D0463J

Purchased No

250 Each

6.0000

14 56



1115000 10-7/27

## Location

## Loc Qty

## Loc Code

ST357

6

107939

6

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Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 59940

Parent Item: D350-591-133

Parent Item Name: Aft Maintenance Step

Start Date: 6/17/2010

Required Date: 6/24/2010

Start Qty: 4.00

Required Qty: 4.00

D2230-1 Manufactured No

250 Each

29.0000

4

16

132

32



Lug

Location

Loc Qty

Loc Code

ST476

29

57828

29

177.0000

4

16

132

D2230-3 Manufactured No

250 Each



Lug

Location

Loc Qty

Loc Code

ST476

177

59115

17

59418

160

0.0000

8

32

D2732-030 Manufactured No

250 Each



Rubber Cushion

(8X) 3.00" per DSI 9459 revB

D2856-400



Abraision Strip

Manufactured No

250 f

182.7820

1.26

5.04

Location

Loc Qty

Loc Code

ST403

182.782

56626

182.782

(2X) 4.00" X 7.20" per dwg

D2945



Step Mounting Plate

Manufactured No

250 Each

19.0000

1

14

Location

Loc Qty

Loc Code

ST031

19

55064

19

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Page 3

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Parent Item: D350-591-133

Parent Item Name: Aft Maintenance Step

Start Date: 6/17/2010

Required Date: 6/24/2010

Start Qty: 4.00

Required Qty: 4.00

MS21042L4

Purchased

No

250

Each

3,128.000

14

56



Nut



10727

*SP*

*4x*

## Location

## Loc Qty

## Loc Code

ST139	2	
111827	2	
ST300	3126	
113422	68	
114523	50	
114718	1000	
114784	2000	
9063	8	

*36*

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Shop Packet Print

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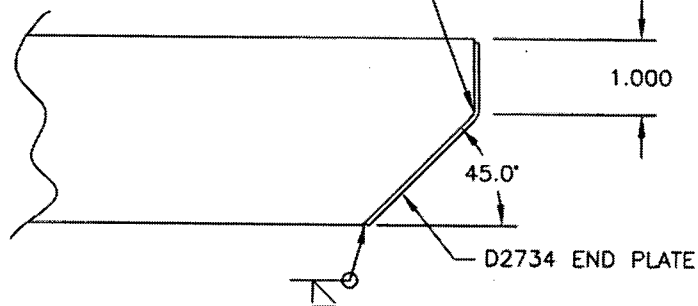
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ROUND CORNER OF EXTRUSION TO  
MATCH BEND RADIUS OF END PLATE



TYPICAL STEP END DETAIL  
NOT TO SCALE

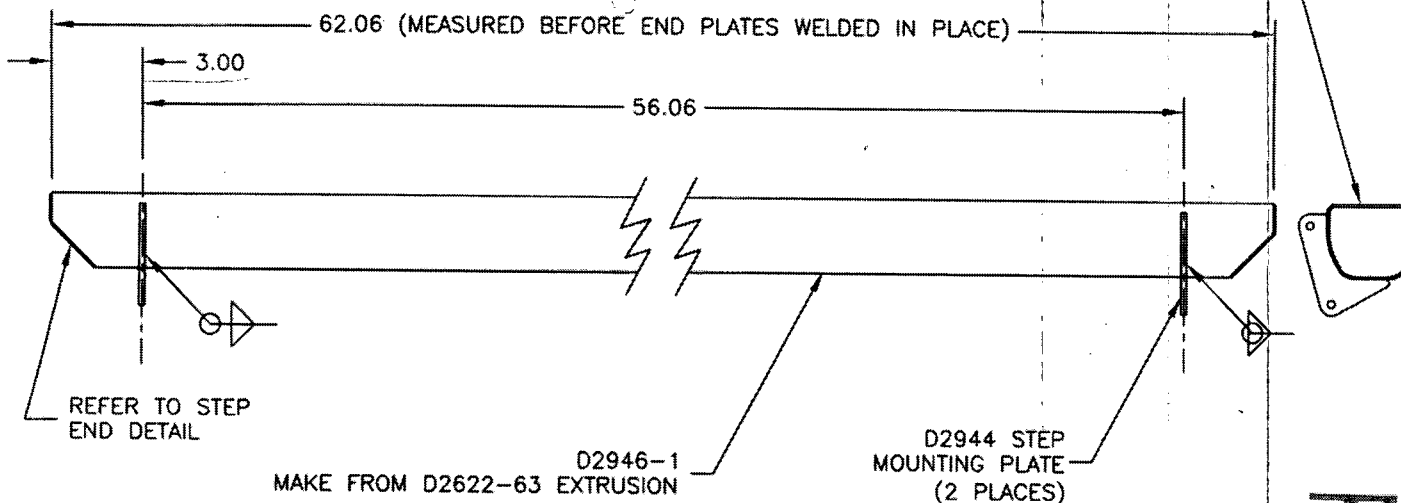
### D2946 STEP ASSEMBLY PARTS LIST

Part No.	Description	QTY
D2946	Step Assembly	X
D2622-63	STEP EXTRUSION*	1
D2734	END PLATE	2
D2944	STEP MOUNTING PLATE	2

\*cut per drawing

NOTE: ALL WELDS SHALL BE  
100% VISUALLY  
INSPECTED BY A  
QUALIFIED INSPECTOR  
PER DART QSI 004

APPLY BLACK ANTI-SKID  
ON TOP SURFACE TO  
BOTTOM OF TOP RADIUS



D2946-041 STEP ASSEMBLY

### D2946 STEP ASSEMBLY

- 1) MAKE FROM D2622 STEP EXTRUSION
- 2) WELD PER DART QSI 004
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT ENTIRE ASSEMBLY WHITE (4.3.5.1) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT PER DART QSI 005 4.4
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

UNCONTROLLED COPY  
SUBJECT TO  
WITHOUT NOTICE  
WORK ORDER  
NO. 59940  
P810-6-17

DESIGN	CP	DRAWN BY	DATE	CHECKED	APPROVED	DRAWING NO.	TITLE	REV. B	SHEET 1 OF 1	SCALE
A		PH	05.11.14			D2946	STEP ASSEMBLY			1:6
B			05.11.14				NEW ISSUE			
UPDATE FINISHING NOTE										

DART AEROSPACE LTD  
HAWKESBURY, ONTARIO, CANADA

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



## 5. PARTS LIST

Qty -111A	Qty -113	Qty -115	Qty -117A	Qty -119	Qty -133	Part Number	Description
X						D350-591-111A	<i>Heli-Access-Step</i> ™, Long Step – High Skid
	X					D350-591-113	<i>Heli-Access-Step</i> ™, Short Step – High Skid
		X				D350-591-115	<i>Heli-Access-Step</i> ™, Short Step – Low Skid
			X			D350-591-117A	<i>Heli-Access-Step</i> ™, Pre-Flight Step
				X		D350-591-119	<i>Heli-Access-Step</i> ™, Long Step – Low Skid
					X	D350-591-133	<i>Heli-Access-Step</i> ™, Aft Maintenance Step
	1					D2310	STEP ASSEMBLY (HIGH-SHORT)
1						D2311	STEP ASSEMBLY (HIGH-LONG)
		1				D2354	STEP ASSEMBLY (LOW-SHORT)
				1		D2355	STEP ASSEMBLY (LOW-LONG)
					1	D2946-041	STEP ASSEMBLY (MAINTENANCE)
4	2	2	2	2		D2171	CLAMP
4	2	2	2	2		D2182B035	CUSHION
					4	D2230-1	MOUNTING LUG
					4	D2230-3	MOUNTING LUG
8	4	4	4	4		D2274	RADIUS BLOCK
			1			D2362-041	SUPPORT BRACKET
2	1			1		D2362-3	SUPPORT BRACKET
		1				D2362-5	SUPPORT BRACKET
2	1	1	1	1	2	D2856-400-720	ABRASION STRIP
					1	D2945	MOUNTING PLATE
2	2	2		2		AN3-37A	BOLT
					2	AN4-7A	BOLT
					4	AN4-11A	BOLT
					8	AN4-14A	BOLT
		4				AN4-16A	BOLT
8	4			4		AN4-20A	BOLT
1	1	1	4	1		AN4-22A	BOLT
4	4	4		4		AN960JD10	WASHER
10	6	2	4	6	14	AN960JD416	WASHER
		4				AN960JD416L	WASHER
2	2	2		2		MS21042L3	NUT
9	5	5	4	5	14	MS21042L4	NUT

Qty -121	Qty -122	Qty -123	Qty -124	Part Number	Description
X				D350-591-121	<i>Heli-Access-Step</i> ™, Short Step – High Skid, LH
	X			D350-591-122	<i>Heli-Access-Step</i> ™, Short Step – High Skid, RH
		X		D350-591-123	<i>Heli-Access-Step</i> ™, Short Step – Low Skid, LH
			X	D350-591-124	<i>Heli-Access-Step</i> ™, Short Step – Low Skid, RH
1				D2351-041	STEP ASSEMBLY (HIGH-SHORT, LH)
	1			D2351-042	STEP ASSEMBLY (HIGH-SHORT, RH)
		1		D2356-041	STEP ASSEMBLY (LOW-SHORT, LH)
			1	D2356-042	STEP ASSEMBLY (LOW-SHORT, RH)
1	1	1	1	D2230-1	MOUNTING LUG
1	1	1	1	D2230-3	MOUNTING LUG
1	1	1	1	D2856-400-720	ABRASION STRIP
2	2	2	2	AN3-37A	BOLT
3	3	3	3	AN4-13A	BOLT
4	4	4	4	AN960JD10	WASHER
6	6	6	6	AN960JD416	WASHER
2	2	2	2	MS21042L3	NUT
3	3	3	3	MS21042L4	NUT

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Revision: G  
Date: 08.10.06

REFERENCE ONLY

# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS D350-591 REV. G OR EARLIER  
AND  
INSTRUCTIONS OF CONTINUED AIRWORTHINESS ICA-D350-591 REV. 2 OR EARLIER

REF CANADIAN STC: SH92-6  
REF FAA STC: SH967NE

For D350-591-121/-122/-123/-124/-133 steps, customers have the option of installing D2732-030 cushions under the D2230-1/-3 clamps to accommodate varying crosstube diameters and to improve fit. It is also acceptable to use longer or shorter AN4 bolts, and/or extra AN960JD416 washers under the nut to ensure 1.5 to 4 threads in safety. See Figure 1 on sheet 2 of this service instruction for reference.

For D350-591-121/-122 steps at CHG 005, D350-591-123/-124 steps at CHG 004, and D350-591-133 steps at CHG 003, the parts list of D350-591 Rev. G and ICA-D350-591 Rev. 2 is amended as follows:

## ADD:

Qty -121	Qty -122	Qty -123	Qty -124	Qty -133	Part Number	Description
X					D350-591-121	Heli-Access-Step™, Short Step – High Skid, LH
	X				D350-591-122	Heli-Access-Step™, Short Step – High Skid, RH
		X			D350-591-123	Heli-Access-Step™, Short Step – Low Skid, LH
			X		D350-591-124	Heli-Access-Step™, Short Step – Low Skid, RH
				X	D350-591-133	Heli-Access-Step™, Aft Maintenance Step
2	2	2	2	8	D2732-030	CUSHION
2	2	2	2	8	AN4-16A	BOLT

The DSI-9459-011 kit is available for customers with earlier model D350-591-121/-122/-123/-124 steps. Longer AN4 bolts are provided to fasten the clamps. The DSI-9459-013 kit is available for customers with earlier model D350-591-133 steps.

Qty -011	Qty -013	Part Number	Description
X		DSI-9459-011	Rubber Cushion Kit (for -121/-122/-123/-124 steps)
	X	DSI-9459-013	Rubber Cushion Kit (for -133 steps)
2	8	D2732-030	CUSHION
2	8	AN4-16A	BOLT

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED  
BY:   
D. SHEPHERD (DE # 02)

DATE: 09.06.24  
CERT. NO.: SH92-6  
ISSUE NO.: 11

B	AN4-16A WAS -17A FOR -013/-133 KIT	CP	09.06.24
A	NEW ISSUE	CP	09.04.17
REV.	DESCRIPTION	BY	DATE
DESIGN	92	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	92		
CHECKED	92	DRAWING NO.	REV. B
MFG. APPR.	N/A	DSI 9459	SHEET 1 OF 2
APPROVED	11/11	TITLE	SCALE
DE APPR.	11/11	OPTIONAL CLAMP MODIFICATIONS	NTS
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